

FLEXIBLY INTERFACEABLE PORTABLE COMPUTING DEVICE

CROSS-REFERENCE TO RELATED APPLICATION

This application is a continuation of U.S. patent application Ser. No. 09/070,391, filed Apr. 30, 1998, U.S. Pat. No. 6,362,440, which claims benefit of No. 60/079,745 filed Mar. 27, 1998. The priority of the application is claimed herein, and the entire disclosure is incorporated herein by reference.

This application contains subject matter which is related to the subject matter of the following application, which is assigned to the same assignee as this application. The below-listed application is hereby incorporated herein by reference in its entirety: "METHODS, SYSTEMS AND PRODUCTS PERTAINING TO A DIGITIZER FOR USE IN PAPER BASED RECORD MAKING SYSTEMS," by Clary et al., Ser. No. 08/747,735, filed Nov. 12, 1996.

TECHNICAL FIELD

This invention relates, generally, to portable computers and, more particularly, to interfaces for portable computers employing a display, a keyboard, and a handwriting recording unit.

BACKGROUND ART

Computerized recording units to digitize text concurrently with hand writing thereof so that the handwritten text can be processed as data are known. Such digitization equipment can, for example, employ a digitizing tablet to generate data that represents coordinates of an electronic stylus applied thereto. In one such system described in the above-referenced, commonly assigned application, the digitizing tablet can generate positional information by detecting emissions of a first radio frequency from the stylus. The stylus can further include an electronic inking tip, such as a pressure sensor located therein for generating a second radio frequency when the stylus is in contact with a writing surface. By monitoring these first and second radio frequencies across a radio-sensitive grid, the digitizing tablet can generate a data stream representative of strokes of the stylus. That is, text written on or over the surface of the digitizing tablet can be recorded as "stroke" data. In addition, the tip of the stylus can have physical inking capabilities that allow concurrent physical marking of paper laid atop the digitizing tablet. In such recording units, recognition processes can convert "stroke" data into character strings. Plus, image data can be generated from "stroke" data in order to graphically display the strokes (e.g., on a limited size LCD display screen).

It would be desirable to be able to employ such a recording unit, paper, and stylus to provide an additional user interface to a laptop or notebook computer. Available laptop or notebook computers typically allow user interaction through a keyboard and display coupled to a processor. However, in many situations, it is desirable, familiar, and comfortable for a user to take notes or enter data with a stylus and paper, rather than, or in addition to, through the keyboard. Exemplary situations include attendance at an office meeting or a group conference, potentially accompanied by presentations, lectures, touring and dining. In such circumstances, typing at a keyboard can be disruptive, distracting, distancing and inconvenient. Moreover, it is often desirable to have available a physical copy of notes,

such as for photocopying, transmitting by facsimile, or transferring by hand. Furthermore, it remains desirable to allow easy access (e.g., during breaks of business travel) to an electronic copy of any notes taken, as well as switching or selecting between handwriting and keyboarding, for reproduction, distribution, manipulation, processing and archiving of the information, plus integration of the information with data already resident on a disk or other memory of the computer.

Thus, for a laptop or notebook computer with a display, a need exists for allowing user selection of access thereto through a keyboard and/or through a recording unit, markable surface, and stylus. A further need exists for a capability allowing selective coupling of the recording unit and/or the keyboard. A still further need exists for a device embodying such features to be portable and conveniently, compactly, and attractively packaged.

SUMMARY OF THE INVENTION

Pursuant to the present invention, shortcomings of the existing art are overcome and additional advantages provided through the provision of flexible interfacing and portability capabilities of a computing device. A display is coupled to a processor. The processor is coupled, or selectively coupled, to either or both of a keyboard and a handwriting recording unit. The display and the keyboard provide a first user interface to the processor. The recording unit includes a working surface thereon. The working surface is superimposable with a removable markable surface. A stylus allows user marking on the markable surface when the working surface is superimposed with the markable surface. The stylus provides a stroke signal and a stroke mark. The stroke signal conveys to the recording unit a section of information. The stroke mark conveys to the markable surface the section of information. The recording unit, the markable surface, and the stylus provide a second user interface to the processor. Optionally, the display also contributes to providing the second user interface to the processor.

In another aspect of the invention, a logic design implementation coupled to the processor allows user switching among viewing modes for the display. The viewing modes can include portrait and landscape modes.

In yet another aspect of the present invention, a logic design implementation coupled to the processor serves to switch among viewing modes for the display. The logic design implementation can switch among the viewing modes responsive to status of one or more of the keyboard and the recording unit.

The viewing modes can include portrait and landscape modes. The logic design implementation can switch to portrait mode when the recording unit is coupled to the processor and in use. The logic design implementation can switch to landscape mode when the keyboard is coupled to the processor and in use.

The recording unit can comprise a second display. The processor can be referred to as a first processor, and the recording unit can comprise a second processor. The first and second processors can be coupled to respective first and second logic design implementations which serve to synchronize information between the first and second processors.

The recording unit can be selectively coupled to said first processor. The first and second logic design implementations can serve to synchronize information between the first and second processors when the recording unit is coupled to the first processor.